



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-R3
UNIQUE ID NUMBER: 02P23RR138
COMBUSTOR: Phase5 Tiled
ENGINE TYPE: TF

BYPASS RATIO: 8.9
PRESSURE RATIO (π_{co}): 49.6
RATED THRUST (F_{oo}) (kN): 363.9

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F _{oo} (g/kN) or SN	0.0	8.0	80.3	16.4
AS % OF ORIGINAL LIMIT	0.0	6.8	57.8	98.6
AS % OF CAEP/2 LIMIT (NO _x)			72.2	
AS % OF CAEP/4 LIMIT (NO _x)			75.7	
AS % OF CAEP/6 LIMIT (NO _x)			81.9	
AS % OF CAEP/8 LIMIT (NO _x)			90.0	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

DATA STATUS

- PRE-REGULATION
x CERTIFICATION
- REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
x DEDICATED ENGINES TO PRODUCTION STANDARD
- OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
(ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)

- OUT OF PRODUCTION (DATE: -)
- OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.872	0.00	0.43	67.29	7.8
CLIMB OUT	85	2.2	2.322	0.00	0.43	47.89	9.7
APPROACH	30	4.0	0.744	0.00	0.53	14.89	10.2
IDLE	7	26.0	0.270	0.00	5.92	6.24	1.8
LTO TOTAL FUEL (kg) or EMISSIONS (g)			1027	0	2769	28077	-
NUMBER OF ENGINES				6	6	6	6
NUMBER OF TESTS				14	14	14	14
AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX)				0.0	7.6	77.2	14.7
SIGMA (D _p /F _{oo} in g/kN, or SN)				0.0	1.2	0.9	2.0
RANGE (D _p /F _{oo} in g/kN, or SN)				0.0	6.32-9.17	75.86-77.98	11.4-16.7

ACCESSORY LOADS

POWER EXTRACTION 0 (kW)
STAGE BLEED 0 (% CORE FLOW)

AT - POWER SETTINGS
AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	280.4-303.5
ABS HUMIDITY (kg/kg)	0.00308-0.01917

FUEL

SPEC	
H/C	1.92
AROM (%)	16.89

MANUFACTURER: Rolls-Royce plc
TEST ORGANIZATION: Rolls-Royce plc
TEST LOCATION: Derby
TEST DATES: 24/09/2009-28/08/2019

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

REMARKS

- Representative of Trent 1000-TEN engines
- EDNS01000935986

Compliance with Fuel Venting requirements:

x ('x' if complies, 'PR' if pre-regulation,
'-' if information is not available)